TITLE OF THE INVENTION:

SCREW ANCHOR

The present invention relates to a screw anchor, in particular a screw anchor suitable for use in the construction, to which the following description refers purely by way of example.

BACKGROUND OF THE INVENTION

As is known, most known screw anchors comprise a deformable tubular member made of plastic or metal, and which is inserted inside a hole in a wall, body or anchoring member, with its longitudinal axis coaxial with the hole axis.

The tubular member of screw anchors of the above type is normally divided into three different portions : a deformable central portion, a head connected to a first end of the central portion, and a cylindrical collar connected to the second end of the central portion and having a supporting flange.

More specifically, the central portion has four longitudinal through slots spaced angularly apart and defining, on the central portion, four longitudinal anchoring tongues, each of which is deformed radially, with respect to its rest position, by a screw screwed tightly inside the screw anchor.

Unfortunately, the deformability of the central portion of screw anchors of the above type is poor when the screw anchor is inserted inside a hole with an irregular cross section, as frequently happens when the hole is formed in a body or wall made of relatively friable or non-homogeneous material, such as a wall of plasterboard or similar material of poor internal consistency.

In such cases, the central portion of the anchor deforms, and therefore adapts, poorly, making it particularly difficult to insert, correctly position, and fasten the screw anchor inside the hole, with all the drawbacks this entails.

SUMMARY OF THE INVENTION

It is an object of the present invention to provide a screw anchor designed to eliminate the aforementioned drawbacks.

According to the present invention, there is provided a screw anchor having a deformable central portion in which four main longitudinal slots are formed; said screw anchor being characterized by comprising a number of secondary longitudinal slots formed in said central portion.

In a preferred embodiment of the screw anchor defined above, each said secondary longitudinal slot defines, on said central portion and with an adjacent main longitudinal slot and/or an adjacent secondary longitudinal slot, respective deformable secondary

longitudinal anchoring tongues.

BRIEF DESCRIPTION OF THE DRAWINGS

A non-limiting embodiment of the present invention will be described by way of example with reference to the accompanying drawings, in which:

Figure 1 shows an enlarged view in perspective of a screw anchor in accordance with the teachings of the present invention;

Figure 2 shows a first side view of the Figure 1 screw anchor;

Figure 3 shows a second side view of the Figure 2 screw anchor;

Figure 4 shows an enlarged section of the screw anchor along line I-I in Figure 2.

DETAILED DESCRIPTION OF THE INVENTION

Number 1 in Figures 1, 2 and 3 indicates as a whole a screw anchor which is insertable inside a hole (not shown) formed in a wall or any anchoring body or member (not shown), with its longitudinal axis A coaxial with the axis of the hole (not shown), and is engaged by a known screw (not shown) which permanently deforms the screw anchor inside the hole (not shown).

Screw anchor 1 comprises a deformable tubular member made preferably, though not necessarily, of plastic, metal, or similar materials, and which comprises a deformable central portion 2, and a collar 3 and a head 4 connected to respective opposite ends of central portion 2.

Collar 3 is coaxial with longitudinal axis A, and has, at one end, an annular flange 5, and a number of projecting longitudinal appendixes 6 for preventing screw anchor 1 from rotating about longitudinal axis A when screw anchor 1 is inserted fully inside the hole (not hole) and the screw is inserted inside the screw anchor.

More specifically, in the example shown, projecting longitudinal appendixes 6 extend, parallel to longitudinal axis A, between annular flange 5 and the end of central portion 2, project radially from the surface of collar 3, and are equally spaced angularly.

With particular reference to Figures 1, 2 and 3, head 4 comprises a cylindrical portion 4a connected to the opposite end of central portion 2 to collar 3; and a substantially truncated-cone-shaped end portion 4b.

Central portion 2 of screw anchor 1 has an outside diameter which is preferably, though not necessarily, approximately equal to but no smaller than the inside diameter of the hole formed in the wall and into which screw anchor 1 is inserted.

Central portion 2 of screw anchor 1 also comprises four main longitudinal slots 8, which are formed in the wall of the central portion, extend parallel to axis A along the whole length of central portion 2, and are spaced angularly apart.

More specifically, and as shown more clearly in Figure 4, the four main longitudinal slots 8 are through slots, which are formed through the wall of central

portion 2, are equally spaced angularly, and define two deformable main longitudinal anchoring tongues 9.

As shown more clearly in Figures 3 and 4, the two main longitudinal tongues 9 are diametrically opposite, i.e. are located on opposite sides of a centreline plane B through axis A, and each have a main anchoring face or surface 9a having a preferably, though not necessarily, serrated profile for easy insertion of screw anchor 1 inside the hole (not shown), and for preventing withdrawal of the screw anchor from the hole.

Unlike known screw anchors, screw anchor 1 also comprises, in addition to the four main longitudinal slots 8, two secondary through longitudinal slots 10 formed in the body of central portion 2 and extending, parallel to axis A, along the whole length of central portion 2.

Each secondary longitudinal slot 10 is formed in central portion 2 to define, with the two adjacent main longitudinal slots 8, two deformable secondary longitudinal anchoring tongues 11.

More specifically, in the example shown, the two secondary longitudinal slots 10 extend along the centreline plane B of the anchor, along the whole length of central portion 2, and are diametrically opposite, so that each secondary longitudinal slot 10 is equidistant from the two adjacent main longitudinal slots 8.

With particular reference to Figure 4, in the example shown, the four secondary longitudinal tongues 11

lie, in pairs, in respective planes E parallel to but not coincident with plane B, and each have an outer face or surface 11a with a preferably, though not necessarily, serrated profile.

Obviously, main longitudinal slots 8 and secondary longitudinal slots 10 may also extend in planes through axis A, so that the resulting secondary longitudinal tongues 11 are positioned radially.

The secondary longitudinal slots 10 formed in central portion 2 may obviously also be more than two in number, so as to define a greater number of deformable secondary longitudinal anchoring tongues 11. In which case, each secondary longitudinal tongue 11 may be defined by a pair of adjacent secondary longitudinal slots 10, or by a secondary longitudinal slot 10 and an adjacent main longitudinal slot 8.

With reference to Figures 1 and 4, screw anchor 1 comprises a through hole 7 extending coaxially with longitudinal axis A and for receiving the shank of the screw (not shown) which, in use, deforms central portion 2 radially outwards to fix screw anchor 1 to the wall.

More specifically, in the Figure 4 example, through hole 7 of screw anchor 1 is shaped to comprise, internally, a number of projecting longitudinal ribs 12 extending, parallel to longitudinal axis A, along the whole length of screw anchor 1.

Longitudinal ribs 12 are spaced angularly apart, so that through hole 7 has a substantially star-shaped cross

section.

In the Figure 4 example, there are six longitudinal ribs 12, though their number may obviously vary.

Operation of screw anchor 1 is easily deducible from the foregoing description with no further explanation required.

The advantages of screw anchor 1 are as follows: secondary longitudinal tongues 10 greatly increase the deformability of screw anchor 1, while at the same time maintaining a strong central portion 2 which can therefore adapt to holes of irregular cross section or formed in walls of perforated material or material of poor consistency.

With the above geometry, screw anchor 1 can be inserted easily inside the hole in the wall, regardless of the material the wall is made of, and at the same time is anchored firmly to the wall. The above geometry, in fact, permits uniform radial extension of screw anchor 1, thus improving force distribution in the wall when anchoring the anchor.

Finally, mechanical laboratory tests have shown that screw anchor 1 as described enables the user to judge more accurately the tightening torque produced when screwing the screw inside the through hole in screw anchor 1 and head 4.

Clearly, changes may be made to the screw anchor as described and illustrated herein without, however, departing from the scope of the present invention.